PROJECT APPRAISAL IN SMALL SCALE INDUSTRIES WITH SPECIAL REFERENCE TO D. S. I. D. C.

DISSERTATION SUBMITTED

IN PARTIAL FULFILMENT OF THE REQUIREMENTS
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BY

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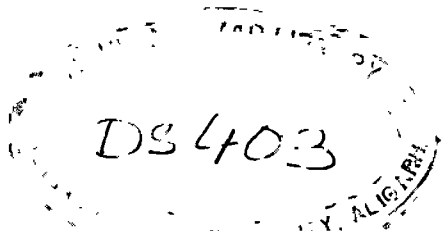
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I N T R O D U C T I O N

Overall importance of the SSI in post independence period is self explainatory. Growing literature on this topic itself speaks out the need of S.S.I. in our economy. There are many steps that have been taken by the government to encourage the SSI. Providing financial assistance is one of them. The provision of assistance differs from institution to institution and they follow different criteria but the aim leads to only goal that is their growth.

I have approached the subject from a point of view which is the base of SSI i.e. financial help. The method of appraisal out of a number of application with a view to financial viability has been the target of study.

For this purpose DSIDC has been chosen. The study has been divided into two major parts. Part one deals with need and importance of SSI and a brief history and objects of DSIDC. Part two deals with the study of present criteria followed by DSIDC for the appraisal of the proposals and where ever possible suggestions have been given to incorporate new methods.

One of the most important factor in writing the dissertation has been kept in mind. That is the figures have been modified because of the instructions of DSIDC authoritties. The data has been made available only on the condition that the name of persons and the amount of help should not stated as it is.

Limitations:

What ever decision has been taken (which is main aim of study) for the appraisal of project, that is fully based on the facts and figures, (though changed). I have been shown. I have made all possible efforts to think over the problem and to give suggestion. Still the short coming in it will be, because of my own inability.

Dated:-
March 28th, 1982.

(JAVAID AKHTER)

A C K N O W L E D G E M E N T

At the outset I wish to express my extreme gratitude to my eminent professor Dr. NAJMUL HASAN, my guide and supervisor for many of his lost hours, for I had the proud previlege of having his able guidance. I feel myself indebted to my uncle Khurshidul-Islam, Engr in DSIDC, for his co-operation and assistance in every respect. I am also thankful to my former teacher Dr. Zia-ul-Ghani, lecturer in commerce, for his help and encouragements.

For being constant source of inspiration and encouragement I thank to my parents and brother.

I would like to convey my profound gratitude to one whom I can't name i.e. one who will take the trouble of evaluating it. I am also thankful to my all classmates for their help, in particular to Mr. S.M. Habibullah.

C O N T E N T S

NEED AND IMPORTANCE OF SSI

Any thing that is important is needed. Same is applicable with SSI. Being popular and the present need of our country SSI is must. Ever increasing population should be provided with employment which is great source of satisfaction for the public. Beside employment there are host of factors speaking about the need and importance of SSI. Schumacher in his book "Small is beautiful" says "To say the least, which is already very much we must thoroughly understand the problems and begin to see the possibility of evolving a new life style, with new methods of production and new pattern of consumption: a life style designed for performance in Industry. We can interest ourselves in the evaluation of small scale technology, technology with human race, so that people have a chance to enjoy them selves while they are working, instead of working soley for their pay pocket and hoping suually for lornly, for enjoyment soley during their leisure time.

If we look it economically, SSI form an integral part of our economic structure. They constitute of continuing element in the scheme of national planning

For agricultural economy like ours where 80 per cent population live in remote and backward area and where there is no chance of large industries to set up small scale industries alone could assist to find out solution for India's socio-economic problem. The basic social philosophy underlying Indian's planning is that centralised large scale operation will be adopted only to the extant of necessary to drive appropriate advantages from modern technology over the rest field, small scale industries will be encouraged to play their part.

Definition:

Small scale industries may be defined as the basis of capital invested in it. According to new Industrial policy Resoolution July 23, 1980, SSI are defined as those having an investment upto Rs. 20 lakhs. in plant and machine·y and Rs. 25 lakh in case of ancillory units. An ancillary unit is an industrial unit which has been engaged in manufacture of parts components, sub assembling, or rendering series estimated at 50 per cent of their production or the total services as the case may be, for production of other articles.

However the importance, hence need of SSI can be

unde stood by going through the following arguments in favour of SSI.

a. Employment:

Small scale industries are labour intensive in nature labour intensive industry refers to the industry which provide more employment with less capital. Thus SSI creat more employment per unit of capital. Labour absorbing capacity of SSI can be seen from the fact that an investment of Rs. one lafk in small scale industries provide with employment to 27 persons where as the same investment in large scale sector will offer employment to only 5 per-sons. The study of Mr. Venkatraman reveals that employment generating capacit of the SSI is as much as 8 times than the large sector unit.

The present employment level in small scale industries have been estimated at 20 million and expected to exceed 30 million by the end of 1982-83. Hence it can be said that one out of five persons is employed in small scale industries.

b. Foreign Exchange:

India has been facing the problems of deficit

balance of payment since very beginning small scale industry helps in this respect in two way: The items produced by these industries serve import substitution resulting in the saving of foreign exchange and the same are exported also the earn foreign exchange. Moreover the machinery used in small scale industries is not usually imported but home made machinery serve the purpose. These also helps in conserving foreign exchange. The produce of SSI brings about Rs. 10000 million worth foreign exchange which accounts for roughly 25 per cent of India's total earning of foreign exchange.

c. <u>The Decentralization</u>:

Decentralization elements regional disparities. Large scale sectors are mostly concentrated over metropoton cities and the majority of the population remains deprived of the benefits thy offer. Decentralization of industrial units helps in laping local resources such as raw material, idle saving and local talents. It also improves standard of living in rural and backward area. Hence concentration of opportunities are spread over many areas because of SSI.

The developmat of these sectors are interlinked with other related sectors such as handloom, handicraft, dairy, fisheries etc. This interlink brings growth to that particular region. Hence the decentralization of industries promotes regional development. When the industrialisation penetrates in remote and so for neglected areas only them the real advantage of industrial advancement can be dreampt of.

d. *Capital Extensive:*

One of the most important argument in favour of SSI is their nature of low capital requirement. Capital extensive industry refers to the industrial unit that needs low initial outlay as compared to its employment generating capacity. Capital is no doubt a scarce resource hence must be used in most beneficial venture considering over all needs of economy such as social economical and regional development.

e. *SSI and Government:*

Because of the importance of SSI government is also paying a bit more attention towards SSI. The

expenditure allocated in plans to different sectors. Clearly spells the increasing trend to this effect. Importance of SSI has also been emphasised in industrial policy resolution 1948 and 1956 and in five year plans also. Successive five year plans recognised its importance. This can be seen from the table given below:

Table showing Expenditure on SSI in plans

(Rs. in crores)

	Ist Plan	IInd Plan	IIIrd Plan	IVth Plan	Vth Plan	VIth Estimated.	
1. SSI	42	187	241	128	243	606	1410
2. Total Expenditure	1960	4672	8577	6625	15779	40641	71000

Source: Report of Planning commission Government of India.

f. *Equal Distribution of Income:*

The income generated in SSI is equally distributed among the workers as against in big industries were employers only know how to take work but don't know how to pay. In this way it tries at least theoritically to bridge up the gulf between have and have not.

Performance:

Good performance of small scale industries is reflected by its products. The number of SSI units registered on voluntary basis with the director of industries of different states and union territories constitute almost 90 per cent of total registered factories and account for 40 per cent of total production in manufacturing sector.

A part from quantitative growth there has been a significant increase in product line also in SSI. Electrical appliences, TV sets and most of the plastic products are the produce of SSI.

*SSI and assistance of IDBI:**

IDBI extends its assistance to SSI under its one of the scheme known as refinance scheme. This has been limited also through the machinery bill re-discounting scheme. During the year 1980-81 under same scheme, IDBI has sanctioned Rs. 469.1 crores to 59,731 applicants. This is thehighest sanction so far. The shore of small

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* *IDBI Annual Report, 1980-81, Page 24.*

sector in refinance scheme of IDBI was 67.9 per cent in respect of amount sanctioned and 98 per cent in respect of the number of application.

DELHI SMALL INDUSTRIES DEVELOPMENT CORPORATION LIMITED

Historical Background:

Delhi Small Industrial Development Corporation (D.S.I.D.C.) Ltd. came into being on Feb 26th 1971 under the Chairmanship of Mr. G.P. Shrivastav to proside assistance to small enterpreneour in more than one way. It was fully owned by the Administration of Delhi, but in 1976 under the Chairmanship of the same chairman cum Managing Director its name was changed to Delhi State Industrial Development Corporation.

Main business of the corporation is to assist the small enterpreneours to stort the business of their own. The corporation provides them with premises for the factor (known to them as sheds). It is not in the form of building but a space covered by a sloped cemented constructions. The enterpreneour is asked to pay them interest in the following years. Besides this assistance the corporation also proisdes assistance eligible enterpreneur.

Objects of the corporation:

Objectives of the company may be divided into two parts.

They are a. Main objects

b. Ancillary objects

Main objects are as follows:

1. To aid, counsel, assist, finance, protect and promote the interests of Small Industries in the Union Territory of Delhi, whether owned or run by Government, statutory body, company, firm or individuals and to provide them with capital, credit, means, resources and technical and managerial assistance for the prosecution of their work and business, to enable them to develop and improve their methods of manufacture, management and marketing and their technique of production.

2. To establish and maintain export house(s) to promote export trade and participate in export trade for the benefit of small scale industries.

3. To undertake and provide marketing facilities to the small scale industries of Delhi.

4. To acquire lands develop them suitably by providing communications, power supply, water supply and other facilities at places determined by the company and make them available on such terms and conditions as may be agreed upon to any individual, fir, company, association or concern for the purpose of establishing new small scale industries or for the purpose of shifting the existing small scale industries from any congested area and to take over or establish and administer Industrial Estates in the Urnion Territory of Delhi.

5. To obtain from any Government, or other agency such reports concerning the giving of contracts and sub-contracts and making loans to business concerns as may be deemed necessary for carrying out the aforesaid objects.

6. To procure capital or financial assistance or accommodation for or provide machinery, equipment, technical and managerial assistance, information, instruction, inspection, supervision and other facilities to any company, person, or association for the purpose of carrying into effect any of the aforesaid objects.

7. To manufacture, buy, sell, import, export, install, work and generally deal in any plant, machinery, substances, tools materials, goods or things of any description which, in the opinion of the company, may be conveniently dealt with by the company in connection with any of its objects.

Capital:

Generally the sourceof capital of the corporation is the loan from commercial banks and all the share of fixed capital have been held in the name L.G. The authorised capital of the company is Rs. 20 Lakh divided into 20,000 shares of Rs. 100 each.

Sources and applications of Funds:

Main source of the corporation in respect of finance is borrowing from nationalised banks and also its own equity. The application of the funds is industrial sheds. Only a small portion goes to the small enterpreneurs in the form of assistance for other than buinding. Maintenence of sheds, and payment of interest are also some important uses of funds. Following table will make it clear.

SOURCES		APPLICATIONS	(Rs. in Lakhs)
Grants in aid	1203	Construction of sheds	6000
Rent from entrepreneur	77	Other assistance	526
Government's loan	1350	Ad. expenses	404
Loans from Financial Institution	4000		
	6630		6630

APPRAISAL OF FIRM

Prior to the saction of loan to any firm it is better to have a sound knowledge about the firm's financial solvancy. This is possible only in case of running firm but where the loan is desired for new units to be set up, the present discussion is not applicable there. For new establishment other analysis like technical analysis, market potential and so many other things are needed. A complete market research is also must. Here the crieteria to select the firm for granting the loan is discussted.

Appraisal of the firm is based on the following factors.

1. The rate at which sale have been increasing:

If the firm is making good sales in spite of declining trend of the concern industry, he firm is in better posttion and on the other hand if the sales in industry are rising and the firm is showing a declining trend it is dangerous. But increased sales should always be associated with increase in profit otherwise sales can e increased by reducing prices.

2. *Product wise growth:*

If the firm is dealing in more than one product, the growth of every product should also be examined. Because if the increase in sales is an account of the product which is in its maturity or declining stage it is not a sign of health.

3. *Share price of the Company:*

If the share price of the company have been rised steadily and stand of figure which is enough higher than face value and give a yield which is better than other share in the market, the company must have earned a good reputation in the minds of investors. If, on the other hand, it is not so the co is not a sound one and better to sanctions loan to any other company.

4. *The volume of profit and rate of return:*

This is a good mean to measure the financial viability of the firm to which loan can be sanctioned. A company which is making profit and sound enough must show an increasing trend of the profit.

In this respect accounting ratios are the good

indicators. A comparision between or among the companies will ultimately give the result for the appraisal of the firm. The comparision on the basis of natios have been discussed in details later on.

5. *Miscellaneous Factors:*

All the factors listed above are related to past and they may not give very good information about the future of the company because all these predictions are based on the assumption that if other things remain the same. These other things are market condition, government policies and all economic and non-economic factors. Therefore some other factors should also be considered while appraising the financial viability of the firm. These are as follows:

a. *Company's policies regarding recruitment and selection*
b. *The degree of awareness of social responsibilities and contribution to the society.*
c. *The system of appraisal of executives and incentives praisded to them.*
d. *The manner in which selection of top executives is done.*
e. *The pay scale of executives at different levels.*

f. Degree of marketing research and development that has so for been undertaken by the firm.

Comparision among Firms:

For the appraisal of any firms the comparision among many similar firm is a sound manner. It is better if the performance of the same companies of the past more than one year is compared. In this way the comparision of the company with that of industry will also be possible and it will highlight some other points. For example the sales of a particular company is declining and same case is with other companies naturally the sales in the industry should also show a declining trend. But if the sales in industry does't show a declining trend it shows that the company is not getting market.

However the following points should be kept in mind while comparing the firm with each other.

(i) The firms to be compared should have the same age otherwise the firms with absolutely different age will not bring any satisfactory result.

(ii) The size of the firms should also be the same.

(iii) The firms should also be engaged in the same business. For example a textile mill producing the coarse cloths cannot be compared with that mill which is exporting also.

(iv) The firms should also be dealing in the same market.

These factor should be kept in mind while comparing the firms other wise it will not be valid. If the firm arenot available to the lending authorities it may seek three conditionsor try to get as much similar as possible.

Other factor related to the comparision is the system of costing followed by the firms. Costing system should also be similar otherwise the comparision will not be valid. Marginal costing system will give entirely different picture of profit with that of absorption costing system provided these is opening and closing stock.

Basis of Comparision:

The comparision of the similar firms is done on the basis of accounting data available. The method that suit to it is ratio analysis. Ratio analysis is briefly discussed here.

A ratio means a mathematical relationship between two figures or more than that. If we say three is to two (commonly written as 3:2) we mean that if the former is equal to three in number, weight or size what ever it may and the later two equals to two. Taking this as a measure we reach to a conclusion. If we say a profit of Rs. 10000 it carries no meaning if the related figure to the profit is not found out. Then the relationship between two figures will be calculated then only we can draw a conclusion. For example if the investment in the firm reporting a profit of Rs. 10000 is Rs. 1 lakh it means a profit of 10 per cent which is then compared with other figures.

On the other hand if we examine the salaries paid to the clerk of same firm Rs. 1000 if gives the ratio as 1:10 but it does't give any information or satisfactory result. Therefore the mathematical relationship between two related figure is calculated then compared with other firms.

For the purpose of comparision, the ratios which show the financial soundness of the firm and its ability to meet its obligations are only here analysed and discussed. They are as follows:

1. *Current Ratio:*

This ratio shows a relationship between the current assets of a firm and current liabilities. Current assets of a concern means the assets that can easily be converted into cash within a year,. The same case is with liabilities also i.e. the obligations which the concern has to meet during a year. The proportion between the two should be of 2:1 i.e. the concern should usually have assets of worth Rs. 2 to pay Rs. one to its creditors. This would not be extra investment the current assets because, even if the firm realises 50 per cent of its assets it may pay off to its creditors. The ratio is calculated by the formula given under:

$$\text{Current Ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

The result will indicate that how much Rupees does the company have to honour a claim of Re. one to it. This will enable the lender to see the financial reability of the firm to which the loan is going to be sanctioned.

2. *Debt Equity Ratio:*

As the name itself speaks that the ratio shows a relationship between debt and the equity. Debt here includes all loan taken by concern and equity means its own capital

subscribed by shareholders who are residual claiment of the profit, prefereed stock and surplus. Usually the concern should have financed 2/3 of its total requirements by way of loans. In other words the ratio should be 0.67:1. A high degree of debt would be risky and the new sanction will make the situation more worst.

Profitability Ratios:

Profitability is a good measure for the comparision of two firms. Profit in relation to investment and turnower of sales are two important division of this ratio. It has been discussed as under:

i. Profitability in relation sales:

It comprises two different ratios. They are:

a. Profit margin (gross and net both)
b. Expenses or operating ratio.

a. Profit Margin:

It measures the relationship between profit and sales. In other words it tells that how much sales has been effected to generate a profit of Rs. one. If this

is expressed in percentage (as it is done mostly) it shows that this much of profit has been earned on sales of Rs. 100.

The formula for the calculation of ratio is as Under:

$$\text{Gross profit Margin} = \frac{\text{Gross Profit X 100}}{\text{Sales}}$$

If the sales amounts to Rs. 40,000 and G.P. Rs. 8000 the Gross profit margin will be 20 per cent i.e. 00×(8000[illegible] ÷ 40000). *It ultimately gives the ratio of total cost of goods sold to the sales because gross profit = Sales - cost of goods sold. Here the cost of goods sold is equal to 80 per cent.*

Generally the sales of the firm reports an increasing trend but the profit margin remains constant, it happen because of many reasons such as decrease in price to push up sales or increase in cost takes away most of the part of profit.

b. Operating Ratio:

Operating ratio does not carry more weight since gross profit margin ratio has been worked out. Even then

to know the trend of expenses and the volume of sale it can be calculated. One can substract the gross profit margin from 100 and the resultant figure will represent expenses ratio. These it will be spread over to different expenses to see that as which particular head the expenditure is increasing and if possible the control may be exercised.

2. Profitability in relation to Investment:

When the profit is measured in relation to the investment of a firm it is termed as a return on investment (ROI). The word investment needs some explanation. Investment are generally of three types, assets, capital employed and shareholders equity. But here we limit our discussion to the return in relation to investment as assets only being concerned with our purpose. This is otherwise known as earning power of a firm or overall profitability when it is multiplied by net profit margin ration.

Investment turn over may be calculated by the formula given as follows:

$$\text{Investment Turnover} = \frac{\text{sales}}{\text{investment}} \quad \text{Investment.}$$

here is used as total assets of the firm. Now we notice

that while calculating profitability ratio as a gross profit margin to sales we use the formula where profit net or gross is divided by sdles. Here sales are to be divided by investment in assets. In this way sales will cancel sales and net result will be the division of net profit by investment. It will be termed as ROI or earning power of the firm.

It means that earning power is a function of two variables namely profit margin and investment turnower. The multiplication net profit margin with investment turnover gives ROI. Those two ratios seprately do not give an overall view of the firm as profitability in relation to sales ignores the profitability in relation to investment and vice-versa. Following examples will make it clear.

Assumed, there are two firms x and y having sales of Rs. 1,60,000 and Rs. 16,00,000 respectively and earn 10 per cent return on assets as net profit. Total assets of both firm are worth Rs. 1,60,000. Earning power of the two will be determined as follows:

	x	y
Net Sales	1,60,000	16,00,000
Net profit	16,000	1,60,000
Total assets	1,60,000	1,60,000
Profit margin(on sales)	10 %	1 %
Investment Turnover	1(times)	10(times)
ROI	10 %	10 %

Had the profitability been measured as a margin as sales firm x would have been for preferred over y and y on x in case of investment turnover as a measure of profitability. Though both are identical. It shows that overall profitability is important while making inter-firm comparision.

Now we take an example which shows how the firm is appraised on the basis of ratio analysis following is the summary of ratios of different firms*.

* For the purpose of comparision many other ratio might have been taken but just to have a birds eye view of the problem it has been done so.

	RATIO	COMPULATION	FIRMS				
			A	B	C	D	E
1.	Current Ratio	Current assets / Current Liaty.	1.67:1	2:1	2.3:1	2.5:1	1.85:1
2.	Operating profit margin	Op. Pfofit / Slaes	5.5 %	4 %	9 %	6 %	8 %
3.	Investment Turover	Sales / Investment	1.5	2	1	1.5	2
4.	Production cost to Sales	Prod. Cost / Sdes	71.0 %	76.5 %	70 %	74 %	67.8%
5.	General Expenses	Gen. Exp / Sales	5.8	4.2	6.4	9.2	8.5
6.	Marketing Expenses	Mkt. Exp / Sales	17.7	15.3	14.6	10.8	15.7
7.	Debt. Equity	Debt / Equity	.50:1	.75:1	.58:1	.60:1	.67:1
8.	ROI		8.25 %	8 %	9 %	9 %	16 %

Figures worked out in the tables speak that undoubtly firm E is the best. Then comes C. In this way the firm is appraised first before the appraisal of the project. When the lender finds himself satisfied with the firm that it can pay back the money and it will be financially viable to sanction loan, it grants to one that has got the most sound ratios.

This is about the firm itself, but for the project that an individual or firm is going to under take a seprate analysis for its approval is done which will be discussed in subsequent chapters.

APPRAISAL PROCEDURE OF DSIDC

For the appraisal of the project, various analysis are done. Before the appraisal of shed to be given we write the purpose for which the shed is given to eligible enterpreneur.

Purpose of Loan:

The loan in the form of industrial shed is given to the small enterpreneure for the following purposes:

1. *For setting up any small unit.*
2. *For expansion of any unit.*
3. *For modernising any unit.*
4. *For expansion cum modernisation.*

Basic Requirements:

1. *The enterpreneure should have at least some experience in the field concerned. He should have also undergone some training. The training is also imparted in DSIDC for many purposes.*

2. *The product he is going to manufacture should not have been declared band by the government, Head office usually provides with the list of these products.*

3. The product should have sufficient demand in the market. If it is in case of expansion, the existing capacity should be inadequate to meet the present demand.

4. Entrepreneur is usually asked to furnish the reports of survey if he has undertaken in support of market demand.

5. In case of existing unit to be expanded, it should be sure that the existing capacity has been fully utilised.

6. The sales price of the proposed product should also be matched with the price prevailing in the market.

7. The scope of project should also be seen in accordance with the guidelines praised by the SSI issued by the government. The report should be prepared by approved consultant.

8. After it all has been done the applicant is asked to submit the application, statement of funds flows, and all other requirements.

Procedure:

DSIDC has to adopt the procedure towards the realisation of its set objectives such as import substition, employment, and so as. The usual procedure in the submission of application and its seruitny by the economic

analyst, an engineer and a financial analyst. Thus the appraisal team goes through its veasibility report thoroughly. In doing so it keeps in mind the guidelines and the frame work assignmed by the government.

Specific aspect of the Project:

Following important aspect are also analysed before approval of any project:

1. Managerial Competence:

First of all the competence of the management is taken into consideration. If the enterpreneur is alone his own apabilities are the matter of great importance. In addition to examining his bio-data, his credit worthiness and dealings with bank is also seen.

2. Technical Feasibility:

Technical aspect of the project is examined by the engineers. They take the following factors into consideration for the same.

a. Location:

The location in which the production is to be carried

out is the prime consideration. Adequacy of the area for the expansion, rail road co-ordination and source of raw materials, power and fuel.

b. Availability of raw material:

Nearness of the source of raw material is an advantage in support of the inflows expected by the enterprenuer. The apraising officer satisfies himself with the requirements and availability of raw material.

c. Suitability of the technology being adopted by the enterpreneur is also examined. In accordence with the technological development, the availability of required skilled manpower should also be considered. Manufacturing process proposed is alsoanalysed.

d. Supply of plant and machinery is also an important consideration in this respect. The supply of spare parts of the machinery and other needs of the machine are analysed.

e. Availability of essential service like fuel, transportation, disposal of waste and other such factors

are considered. Availability of ancilliary goods and nearness of the market for the same is also examined.

Financial Soundness of the Project:

This is the major area of study where more attention has been paid. For measuring the financial soundness of the project, its initial outflow is matched with the inflows expected.

Initial Outlay:

DSIDC onlu provides the enterpreneur with industrial shed which can be termed as one of the head of expenditure of project i.e. building. Others are intensible fixed investment such as preliminary expenses and pre-operative expenses. Then comes working capital needs, which consistsof inventories, receivable and cash in hand.

Correct estimation of the above requirement determines the needs of initial outflow of the project. This is very much dependent upon the target of production in units or in terms of sales in rupees. Since DSIDC gives him only the shed so its appraisal criteria is limited to the payment of rent and value of shed in instalment beside

all other factors. Our interest lies mainly in the financial viability of the project. Therefore the initial outflow of DSIDC is the value of shed and inflows of the projects are studied with the profitability report submitted by the enterpreneur as a requirement. The profitability statement takes following forms:

Profitability Statement:

1. *Sales at different levels of capacity utilisation*
2. *Cost of goods produced.*
3. *Gross margin*
4. *Administrative expenses*
5. *Selling and distribution expenses*
6. *Operating income before interest.*

On the basis of the enterpreneur's inflows management approves the application where it finds early recovery of the money. Since the enterprenaur is not asked to pay the whole inflows to the comporation but on part of it which is 50 per cent then lies inflows are reduged to this extent at the time of appraisal of the project. Rent paid by the enterpreneur is excluded from the installmat he pays for the acquisition of shed.

For the cost of goods produced a seperate estimate is attached which is as follows:

	Total Costs	Basis
1. Raw material		Units produced
2. Fuels etc.		
a. Power		
b. Gas		
c. Water		
d. Coal.		
3. Manpower		
a. Unskilled		Gross fixed
b. Skilled		Gross fixed
c. Supervisory Staff		"
d. Engineering		"
e. Managerial staff		"
4. Factory overheads		
a. Rent		Fixed
b. Insurance		Nature of risk
c. Depreciation		Machine used in hours
d. Repair and maintanence		Machine used in hours
e. Store etc.		Fixed

CASE STUDY

To an small enterpreneur DSIDC has given the shed who will manufacture plastic goods. The cost of the shed to the corporation was Rs. 5,00,000. The profitability report submitted by him is as follows

Ist Year:	
Sales Rs.	13,00,000*
Cost of goods	9,00,000
Gross Margin	4,00,000
Ad. Expenses	2,50,000
Selling and Distribution	65,000
Op. income	85,000
Out 9	30,000
Net flow	55,000

Similarly the inflows expected for the comming 6 years are 70,000, 1,20,000 , 180,000, 2,20,000, 3,00,000 and 3,50,000.

Now the inflows or the income that the corporation is going to get is as follows.

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* Sales is estimated only on the basis of marked demand which is dealt by economic analyst

Year	Inflows
1	25,500
2	35,000
3	60,000
4	90,000
5	1,10,000
6	1,50,000
7	29,500 *

Here we can say that the criteria followed by the corporation is termed as payback method. It has been discussed in detail as under:

Pay Back Method:

It is the simplest method to appraise any of the two project. It seeks "how many years will it take for the eash benifit to pay the original cost of an investment" Thus the pay bak method estimated the number of years required to pay back the original money invested. The

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* This is the amount, the corporation has to receive to get total of 5,00,000.

project which has lesser number of yearsis prefered over others. In other words which gives early recovery of the investment is prefered.

The period is calculated as follows:

$$\text{Pay back period} = \frac{\text{Investment}}{\text{Constant inflows (Annual)}}$$

In case inflows are not constant then the P.B. period is calculated by the process of cumulating cash flows till the time when cumalative cash flows become equal to original investment outflow. In our case the payback period has been calculated as under.

Year	Annual inflow	Cumulative inflows
1	25,500	25,500
2	35,000	60,500
3	60,000	1,20,500
4	90,000	2,10,500
5	1,10,000	3,20,500
6	1,50,000	4,70,500
7	1,75,000	6,45,500

The cumulative inflows at the beginning of 7the year exceeds initial outflow of DSIDC so the recovery of investment will tie some where in between 6th and 7th year i.e. 6 years and a fraction of 7th year.

To aalculate the fraction of year weare required only to divide the funds needed to recover the investment in the 7th year which are Rs. 29,500 and the total funds in 7th year are Rs. 1,75,000. So

Rs. 1175,000 are generated in 365 days

Rs. 1 is generated in $\frac{365}{1,75,000}$

and Rs. 29,500 will be generating in $\frac{365 \times 29,500}{1,75,000}$

= 61 days.

Hence the pay back period is 6 years and 61 days. It means that this enterpreneur will take 6 years and 61 days to pay them money for the shed provided all the estimated in respect of sales go on well as have been expected.

In other case, the profitability statement submitted

by the enterpreneur who has been given shed for the manufacturing of clothes is as follows. The cost of shed has been estimated Rs, 7,00,000 (7 lakhs)

Sales Rs.	*10,00,000*
Cost of goods	*7,00,000*
	3,00,000
Gross margin	
Ad. expenses	*1,20,000*
	1,80,000
Selling and distribution	*70,000*
Operating income	*1,10,000*
Interest	*60,000*
	50,000

Similarly the estimates for the inflows in the cloming 5 years are given as Rs. 90,000, 170,000, Rs. 250,000, Rs. 280,000, Rs. 400,000 annually in the cloming five years.

In this case the amount that enterpreneur can pay to the corporation are as follows:

Year	Inflows
1	25,000
2,	45,000
3	85,000
4	1,25,000
5	1,90,000
6	2,00,000
7	2,00,000
8	2,00,000
9	2,00,000
10,	2,00,000

To calculate the pay back period of this project we take the same formula and the period is calculated as under:

Year	Inflows	Comulative inflows
1	25,000	25,000
2	45,000	70,000
3	85,000	1,55,000
4	1,25,000	2,80,000
5	1,90,000	4,70,000
6	2,00,000	6,70,000
7	2,00,000	8,70,000
8	2,00,000	10,70,000
9	2,00,000	12,70,000
10	2,00,000	14,70,000

Now the cumulative inflows at the beginning of 7th year exceeds initial outflow. So the recovery of the investment expected will lie in between 6th and 7th year. The amount to be recovered in 7th year is Rs. 30,000 (7,00,000 - 670,000). So the number of days to recover Rs, 30,000.

$$= \frac{365 \times 30,000}{8,70,000} \approx 13 \text{ days app.}$$

Hence the period of recovery of the outflow is 6 years and 13 days. Now we compare the projects.

PROJECT	*OUTFLOW*	*PERIOD OF RECOVERY*
I	*Rs. 5,00,000*	*6 years 61 days*
II	*Rs. 7,00,000*	*6 Years 13 days*

As the criteria says project II is preferred because it is expected to pay the money back to the corporation earlier.

Critical evaluation of the criteria followed:

Undoubtedly the method has got certain merits which are as follows:

1. It is easy to calculate and understand
2. Cost is lesser than sophisticated methods.
3. Riskyness of a project is tackled at very early stage,
4. This is suitable for DSIDC because they are interested in knowing the time of recovery not inflows after the payback period.

But it suffers from more defects than its merits. They are as follows:

Limitations:

1. It ignores the inflows after the payback period. Though the method sui s to corporation but inflows after payback period are also important.

2. It fails to consider the pattern of inflows but considers only the recovery period. If the payback period of the two projects is same but they bring different flows in different years, naturally the project which earn more money in early years is better. An example will make it more clear

	A (inflows)	B
Year 1	100	300
2	200	200
3	300	100

If the initial outflow of both the projects is Rs. 600, the period for both will be 3 years but B is far better than A because Rs. 300 received today are better than 100.

3. Similarly the projects which generate large inflows in later part of their lives will be ignored by this criteria.

4. Most important criticism against payback period is that it ignores the time value of money (TVM). It has got very important place in all financial decision. In the suggestions it has been fully discussed.

Other methods Suggested:

Since Payback method does not take time value of money into account, therefore the methods consistant with time value of money are suggested and discussed in relevance to DSIDC in detail.

Time Value of Money:

Every individual, firm or company prefers the possession of any amount of cash now than after a year or two. This

he does so because he may earn additional money out of money received today. For instance if any one is asked to have Rs. 100 today of or after one year he will naturally prefer today because after one year he may make Rs. 110 out of Rs. 100 by simply depositing in a bank.(assumed rate of interest is 10 per cent). It means Rs. 100 received today are theoritically as good as Rs. 110 received after one year. Thus it can be defined as "The present value of a future case inflow is the amount of current cash that is of equivalent desirability, to the decision maker, to a specified amount of cash received at a future date".*

As it has been said that the investor is indifferent between Rs. 100 today and 110 after one year. Now the present value of Rs. 100 received after one year will be naturally lesser than 100. It will be 90.90 which has been arrived as follows.

Rs. 110 after one year = 100 today

Rs. 1 after one year = 100/110 today

Rs. 100 after one year $= \frac{100 \times 100}{110} = 90.90$

** Pandey. M.M. Page 25. Vikas.*

Therefore one can say that the money expected by the enterpreneur to pay back is of course money but practically it has got lesser value then its stated value. So it is necessary to calculate the present value of those inflows then to think about the payment. The method consistant with the time value of money are as follows:

Net present Value Method: (NPV)

This method recognises the time value of money. To evaluate the project on the basis of NPV method first of all the borrowers should find out the rate at which he wants to find out the present value of future inflows. After deciding the appropriate rate (generally prevailing rate of interest) the inflows are converted into present values by multiplying the present value of Rupees one with the expected amount. Then the total of present value is substracted from the initial outflow. If the result is positive the project is selected otherwise no.

When both the projects give positive result then the project with high NPV is prefered. An example will make it clear.

Year	Inflow (A)	Inflow (B)
1	800	1500
2	900	1000
3	1000	1000
4	1000	900
5	1500	800

Initial outflow of both the projects is Rs. 4000 and the investor finds 10 per cent interests apportunity in the market.

In this case the appraisal will be based on their NPV which is as follows.

Year	A			B		
	Inflow	Dis. Factor	P.V. of Inflows	Inflow	Dis. Factor	P.V. of Inflow
1.	800	.909	727.20	1500	.909	1363.50
2.	900	.826	743.40	1000	.826	826.00
3.	1000	.751	751.00	1000	.751	751.00
4.	1000	.683	683.00	900	.683	614.70
5.	1500	.620	930.00	800	.620	496.00
			3834.60			4051.20

NPV for A = 3834.60 - 4000.00 = -165.40

NPV for B = 4051.20 - 4000.00 = 51.20

Here project B is accepted because of having positive net present value. It also shows that though the total earnings of the both projects over five years of life are equal but thier time value is different.

Merits:

This method enjoys the following advantages over previous methods.

1. It recognises the time value of money.

2. It considers the total benefits over the life of project.

3. In long run the discounting factor can be changed because of lower value of money.

Drawbacks:

This method also suffers from some drawbacks which are as follows:

1. It is difficult to determine the rate and to use it.

2. When two projects, involving different outlay are there, naturally the net present values will also differ, but some time the project with lesster net present value is to be selected.

3. If there are projects involving different lines than also it seems difficult.

On account of the above reason another method has been discussed.

Internal rate of return method (IRR):

A Basis for DSIDC:

Internal rate of return method can be defined as a rate which equates the present value of cash inflows with the present value of cash outflows. The rate so calculated is the highest rate of interest that a firm or individual will be ready to pay to the without being worse-off by paying the interest accured and principle out the cash flow generated by the projects.

Relevance to DSIDC:

This method can be related to the corporation in

such a way that the rent paid by the enterpreneur may be regarded as interest percent on the cost of shed. The rate of discounting, if is more than this one, naturally the project should be preferred. For instance the cost of the shed is Rs. 3,00000 and rent charged per annuam is Rs. 6000. This is equal to 2 per cent of the cost of project. Now if the internal rate of return of the prlects inflows worked out is more than 2 per cent it will be the maximum amount of rent (converted) that the enterpreneur can easily pay to the corporation.

Following example will make it clear. There are two projects costing Rs. 4,00,00Ø and 50,000 respectively. Their inflows in the coming years are as follows:

Year	*Inflow (x)*	*Inflow (y)*
1	7000	8000
2	7000	8000
3	7000	8000
4	7000	8000
5	7000	8000
6	8000	8000
7	10000	8000
8	15000	8000
9	10000	8000
10	4000	8000

To calculate the IRR for appraisal following steps are taken.

1. First of all we take any discounting factor and discount the inflows.
2. If the result of step 1 ie. NPV is positive it means still there is a chance of increasing the rateof interest and we take a higher discounting factor. But if the net present value is negative, lesser discounting factor is taken and again NPV is calculated.
3. In this way we get two NP values at different rates. To find the accurate rate of discount which will equate the present value of cash inflows to the present outflow of cash, is wored out by interpretation which is as under.

$$IRR = \text{Lower rate} + \frac{\text{Positive NPV}}{\text{Difference in present values}} \quad X$$

Difference in rate.

Now the rate of return is calculated of the projects x and y give earlier.

Year	Inflows	Dis. Factor (10 %)	P.V. (project 'y'	Discounting factor (15 %)	P.V. (project x)
1	7000	0.909	6363	0.870	6090
2	7000	0.826	5782	0.756	5292
3	7000	0.752	5257	0.658	4606
4	7000	0.683	4781	0.572	4004
5	7000	0.621	4347	0.497	3479
6	8000	0.564	4512	0.432	3456
7	10000	0.513	5130	0.376	3760
8	15000	0.467	7005	0.327	4905
9	10000	0.424	4240	0.284	2840
10	4000	0.386	1544	0.247	988
	Less outlay		48961		39420
			40000		40000
			8961		580

Now the calculation of exact discounting factor is done as follows.

Since NPV at 10 per cent is more by Rs. 8961 and at 15 per cent is lesser by 580. It means the actual rate is in between 10 per cent to 15 per cent. The difference between the net present value is Rs. 9541 (48961-39420)

which has been caused due to the 5 per cent difference in rate. There it will be equal to as given in formula

$$IRR = 10 + \frac{8961}{9541} \times 5$$

$$= 10 + 69$$

$$= 10.7 \text{ per cent approximately.}$$

This is the maximum rate of interest that a borrower can easily pay. Now the calculation of IRR for project y has been done.

Years	Inflows	Discounting factor (10 %)	P.V.	Discounting factor (9 %)	P.V.
1 to 10	8000	6.145*	19160	6.418	51344
Less outflow			50000		50000
			840		1344

Exact rate of return can be calculated similarly by the formula given

$$IRR = 9 + \frac{1344}{2184} \times 1$$

$$= 9 + .61 = 9.61 \text{ per cent}$$

* Where the inflows a project are uniform cumulative discounting factor will serve the purpose.

Obviously the project that gives maximum IRR will be preferred.

IRR AS a Basic of Appraisal of a Project in DSIDC:

Under this heading it has been suggested for the corporation to apt for IRR methods. Two projects (with alternation) have been shown evaluated on this basis.

First of all the scheme for the amortisation has been discussed. Under the said scheme it has been tried to establish that how the enterpreneur should plan for the amortisation of loan. (in the form of shed) Naturally the corporation is going to grant the shed to one who has higher possible profitability. Under this scheme following assumption have been made.

Assumptions:

1. Interest at 10 per cent per annum (compound) has been taken into account.
2. 2 per cent of the original cost of project should be repaid as rent during the first four years of the commercial operations.
3. After first four years the output will reach the full capacity level.
4. Moritorium period is four years.

Suggested amortisation scheme (out flow Rs. 5 lakhs)

Year Ended	Principal Sum		Int. due		Rend	Amount outstanding
1	500000	+	50000	-	10000	540000
2	540000	+	54000	-	10000	584000
3	584000	+	58400	-	10000	632400
4	632400	+	63240	-	10000	685640
5	685340	+	68534	-	100000 (prcl)	654200
6	654200	+	65420	-	100000	619600
7	619600	+	61960	-	100000	581560
8	581560	+	58156	-	100000	539716
9	538716	+	53972	-	100000	493688
10	493688	+	49369	-	100000	443057
11	443057	+	44306	-	100000	387363
12	387363	+	38736	-	100000	326099
13	326099	+	32610	-	100000	258709
14	258709	+	25880	-	100000	184580
15	184590	+	18459	-	100000	103038
16	103938	+	19394	-	100000	13342
17	13342	+	1334	-	14676	0

Amortisation Scheme:

Out lay Rs. 4 Lakhs)

Year Ended	*Principal Sum*	*Int. due*	*Rent*	*Amount outstanding*
1	400000 +	40000 +	8000 (rent)	432000
2	432000 +	43200 -	8000 "	467200
3	467200 +	46720 -	8000 "	506000
4	506000 +	50600 -	8000 "	548600
5	548600 +	54860 -	80000 (Prin)	523640
6	523640 +	52364 -	80000 "	495824
7	495824 +	49582 -	80000 "	465406
8	465406 +	46541 -	80000 "	431947
9	431947 +	43195 -	80000 "	395142
10	395142 +	39514 -	80000 "	354656
11	354657 +	35477 -	80000 "	310122
12	301122 +	31012 -	80000 "	261134
13	261134 +	26113 -	80000 "	207247
14	207247 +	29725 -	80000 "	147972
15	147972 +	14797 -	80000 "	82770
16	82770 +	8277 -	80000 "	11047
17	11047 +	1105 -	12152"	0

Now the two projects with cash outlay of Rs. 5,00,000 and 4,00,000 are considered. The life span of each is 25 years with no slavage value. Inflow from the projects are given below:

Year	*Inflow (x)*	*Inflow (y)*
1	*75000*	*100000*
2	*80000*	*150000*
3	*90000*	*180000*
4	*125000*	*200000*
5	*125000*	*200000*
⋮	"	"
25	*125000*	*200000*

Calculation of IRR for (x)

Year	Dis. Factor (25 %)	Inflow	P.V.	Dis. Factor (27 %)	P.V.
1	0.8333	75000	62497	0.7847	58852
2	0.6944	80000	55552	0.6200	49600
3	0.5787	90000	52083	0.4882	43938
4 to 25 *	2.0329	125000	252144	1.7987	224837
		Total P.V.	424244		377227

At 25 per cent of discount rate NPV is higher than initial, outflow so project may be get discounted at a higher rate, At 27 per cent it is lesser. So the rate will be somwehter in between 25 per ce t and 27 per cent. This can be found out by interpolation.

$$IRR = L.R. + \frac{\text{Positive P.V.}}{\text{Diff. in P.V.}} \times (\text{difference in rate})$$

$$= 25 + \frac{24244}{47017} \times 2$$

$$= 25 + 1.03$$

$$= 26.03 \text{ per cent app.}$$

Similarly the IRR for project y involving outlay of Rs. 5,00,000 has been calculated

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* When the flows are uniform, cumulative discounting factor easily serves the purpose.

Calculation of IRR of project y involving on outlay of Rs. 500000.

Year	Dis. factor (32 %)	Inflow	P.V.	Discounting Factor (33 %)	P.V.
1	0.7576	100000	75760	0.7519	75190
2	0.5739	150000	86085	0.5653	84795
3	0.4348	180000	78264	0.4251	76518
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
"	"	"	"	"	"
25	1.3557	200000	271140	1.2856	257120
	Total P.V.		511249		493623

$$IRR = L.R + \frac{\text{Net present value}}{\text{Difference in P.V.}} \times 1$$

$$= 32 + \frac{11249}{17626} \times 1$$

$$= 32 + .63$$

$$= 32.63 \text{ per cent app.}$$

In this way the project having maximum IRR will be preferred. In present case profed y has 32.63 per cent

IRR so it will be preferred over x which has an IRR of 26.03 per cent. These are the maximum rate of interest that the enterpreneurs can pay to the copporation.

If this is converted into rent as interest it will become the maximum amount of rent that the enterpreneur can pay while the copporation usually charges lesser than this. This can be shown in a table below:

Table showing the max. amount of rent that an enterpreneur can pay. (As per his own profitability statement)

Profits	Cost	Rent Charged	IRR	Max. Rent May be paid
x	400000	80,000	26.03 %	1,04,120
Y	500000	10,000	32.63 %	1,63,150

In this way the corporation is in strong position to assist one who can easily afford to pay Rs, 1,63,150 though he is asked to pay Rs. 10,000 only. But the underlying assumption is that the money received should be reinvested at the same rate (IRR) only then these target can be achieved.

Limitation:

1. Most important limitation of IRR is that it assumes that inflows generated in one year are reinvested at the same ratewhich in some situation is not true.

2. Another problem arises when the project is not conventional i.e. it requires expenditure during its life time.

3. In case of project involving different oulay and giving different, it becomes difficult to select one. So another method has been given.

Profitability Index (PI):

It measures the present value of the return per rupee invested. This may be defined as the ratio which is obtaindd by dividing the present value of future cash flows by the present value of cash outflow. If the numerator is greator than demominator it will give the result more than one. And the criteria will be, the select the project which has P.I. more than one. So for as the ranking is concerned, project having more P.I. will be considered better.

For example the outflow and present value of two project is as follows:

Project	Outflow	P.V.	P.I.*
x	50000	56000	1.12
y	50000	550000	1.10

Although this method is giving the same result as in case of NPV method. We appraise the project having larger NPV. But this concept is very much helpful in case of capital nationing problem, which has been discussed as under.

Capital Rationing:

When the firm finds many profitable projects and the funds are limited then it will have to opt for the rationing of capital. Here the firm will have to give up some projects inspite of the fact that they have more P.I. than others because in doing so all funds may be utilised and may get over all higher return than otherwise.

* This is calculated as $PI = \frac{56000}{50000}$

$= 1.12\ x$

$PI = \frac{55000}{50000}$

$= 1,10\ y$

By definition capital rationing is a situation where the firm is constrained for external or self imposed reasons to obtain necessary funds to obtain in all profitable projects.

Following example will make it clear. Suppose there are six projects with given PIs and investment outlay.

PROJECT	*INVESTMENT*	*PI*	*RANK*
A	*200000*	*1.22*	*1*
B	*60000*	*1.95*	*6*
C	*140000*	*1.20*	*2*
D	*280000*	*1.18*	*4*
E	*80000*	*1.19*	*3*
F	*160000*	*1.05*	*5*

Here the management cannot contribute more than Rs. 4,00,000. If we take the projects having interest PI we should apt for A, B and C in this way the net present value will be Rs, 4,19,000 which has been calculated as follows.

Project	Amount	PI	NPV
A	200000	1.22	244000
B	60000	0.95*	57000
C	140000	1.20	168000
	Total NPV		419000

In case we follow P.L. method we will select the projects having high P.L They are 1, 2 and 3. In this case total NPV will be as follows.

Project	Amount	PI	NPV
A	200000	1.22	244000
C	140000	1.20	168000
	Total NPV		412000

In this case total NPV is lesser than previous and this is simply because total funds available havenot been utilised. Therefore it can be concluded that sometime we are bound to select the project with lesser PI than otherwise.

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* Though its PI is lesser than 1 it should not be selected but utilise all funds available it has been selected.

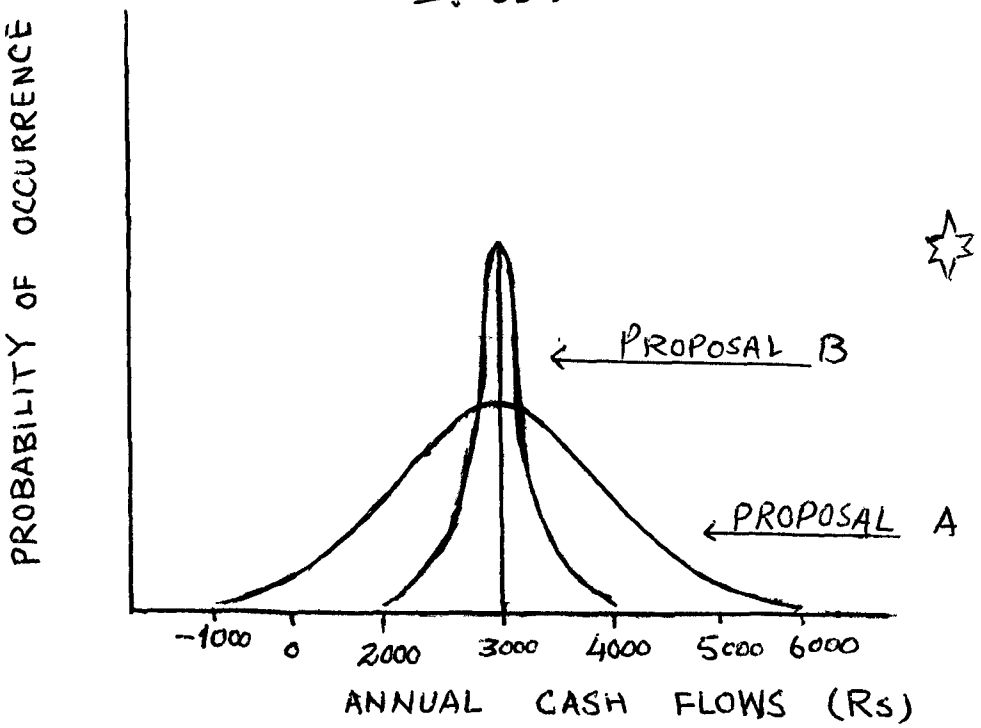
Risk Analysis:

When we expect inflows in the coming year we can't expect them with certainly. It means there is variability in the inflows. Hence we can't make any correct prediction about the cash flow sequence. By definition risk is variability that is likely to occur in future return from the project.

Because all the decision related to financial viability of the project depend upon flows of project so it is necessory to incorporate the risk in the inflows.

There are many methods of incorporating risk in the financial decision. We take only the assignment of probabilitiyes to different expected inflows. This gives us the nature of dispersion of possibl return i.e. standard deviation(S.D.). The project having larger S.D. will be more risky than one which has less S.D. For example there are two projects each costing Rs. 8000 at any time and having each inflows of Rs. 4000 in each of next 3 years. The firm will rank them equally but if the probability distribution of annual cash flow is as follows given in the figure, the firm will undoubtedly prefer project B because it is less risky.

* next page



Naturally project A is more riskybecause of the dispersion of its inflows. This can be easily understood with the help of an example that follows.

Suppose there are two projects A and B having an outlay of Rs, 10000 and Rs, 8000 respectively. Their inflows with associated probabilities are also given,

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☆ : James. C. van Horn.

Proposal A

Year I		Year II		Year III	
Prob.	Inflows	Prob.	Inflows	Prob.	Inflows
0.10	3000	0.10	2000	0.10	1000
0.25	4000	.125	3000	0.25	2000
0.30	5000	0.30	4000	0.30	3000
0.25	6000	0.25	5000	0.25	4000
0.10	7000	0.10	6000	0.10	5000

Proposal B

0.10	6000	0.15	3000	0.25	6000
0.40	5000	0.50	4000	0.20	5000
0.30	4000	0.25	5000	0.25	4000
0.20	3000	0.10	6000	0.20	3000

To appraise the proposa, it involves the following steps.

1. *Calculation of expected value of each year.*
2. *Calculation present value of expected value of inflows*
3. *Calculation S.D.*

Calculation of expected value of project (A)

Year	Inflows	Prob.	Ex. Value.	dx (5000)	dx^2	dxp
1	3000	0.10	300	2000	4000000	400000
2	4000	0.25	1000	1000	1000000	250000
	5000	0.30	1500	-	-	-
	6000	0.25	1500	1000	1000000	250000
	7000	0.10	700	2000	4000000	400000
			5000			(1300000) 1/2
					=	1,140
2	2000	0.10	200	20000	4000000	400000
	3000	0.25	750	1000	1000000	250000
	4000	0.30	1200	-	-	-
	5000	0.25	1250	1000	1000000	250000
	60000	0.10	600	20000	4000000	4000000
			4000			(1300000) 1/2
					=	1140.

3rd = similarly it has also been worked out = 1140

In this case NPV of expected value is also follows

Year	Ex. Value	Dis. Factor	NPV of Exp. value
1	5000	0.909	4545
2	40000	0.826	3304
3	3000	0.751	2253
		P.V.	10102

$NPV = 10,102 - 10000$

$= 102$

and $S.D. = [(1300000 X 0.909 + 1300000 X 0.826 + 1300000 X 0.751)]^{1/2}$

$= 1797$

Calculation of S.D. and NPV of project B.

Year 666	Prob.	Inflow	Expexiture value	dx	dx^2	dxp
1	0.10	6000	600	1600	2560000	256000
	0.40	5000	2000	600	360000	144000
	0.30	4000	1200	400	160000	48000
	0.20	3000	600	1400	1960000	392000
			4400			$(840000)^{1/2}$

$= 917.$

Contd.....

Table contd..... p.b.

Year	Prob.	Inflow	Expe. Value	dx	dx^2	dxp
2	0.15	3000	450	1300	1690000	253500
	0.50	4000	2000	300	90000	45000
	0.25	5000	1250	700	490000	122500
	0.10	6000	600	1700	2890000	289000
			4300			(710000) 1/2
						= 842

Similarly it has been worked out for 3rd year which is equal to 1072.

Now the calculation of P.V. and standard deviation

Year	Exp. Value	Dis. Factor	P.V.
1	4400	0.909	4000
2	4300	0.826	3552
3	4500	0.751	3380
		Total	10932

NPV = 10932 - 8000 = 2932

S.D. = $(840000 \times 0.909 + 710000 \times 0.826 + 1150000^{*} \times 0.751)^{1/2}$

= 1,458

So summarise S.D. and NPV of project A and B are

	A	B
S.D.	1797	1488
NPV	102	2932

According to NPV method project B is better because it has higher NPV its S.D. is also lesser i.e. it is not more risky.

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* Dep for IIIrd year

C O N C L U S I O N

Because the aim of the study was to discuss the criteria for the financial soundness of the two proposals to sanction the assistance, various methods have been discussed and superiority of one on other has also been emphasised. The present system followed by the corporation is old one and does not take into consideration the time value of money. So that has been suggested.

There are many other problems also, being faced by the corporation such as the delay in the payment of rent and installment, for that matter too, the risk adjusted discounting rate should be taken while evaluating the two proposals.

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